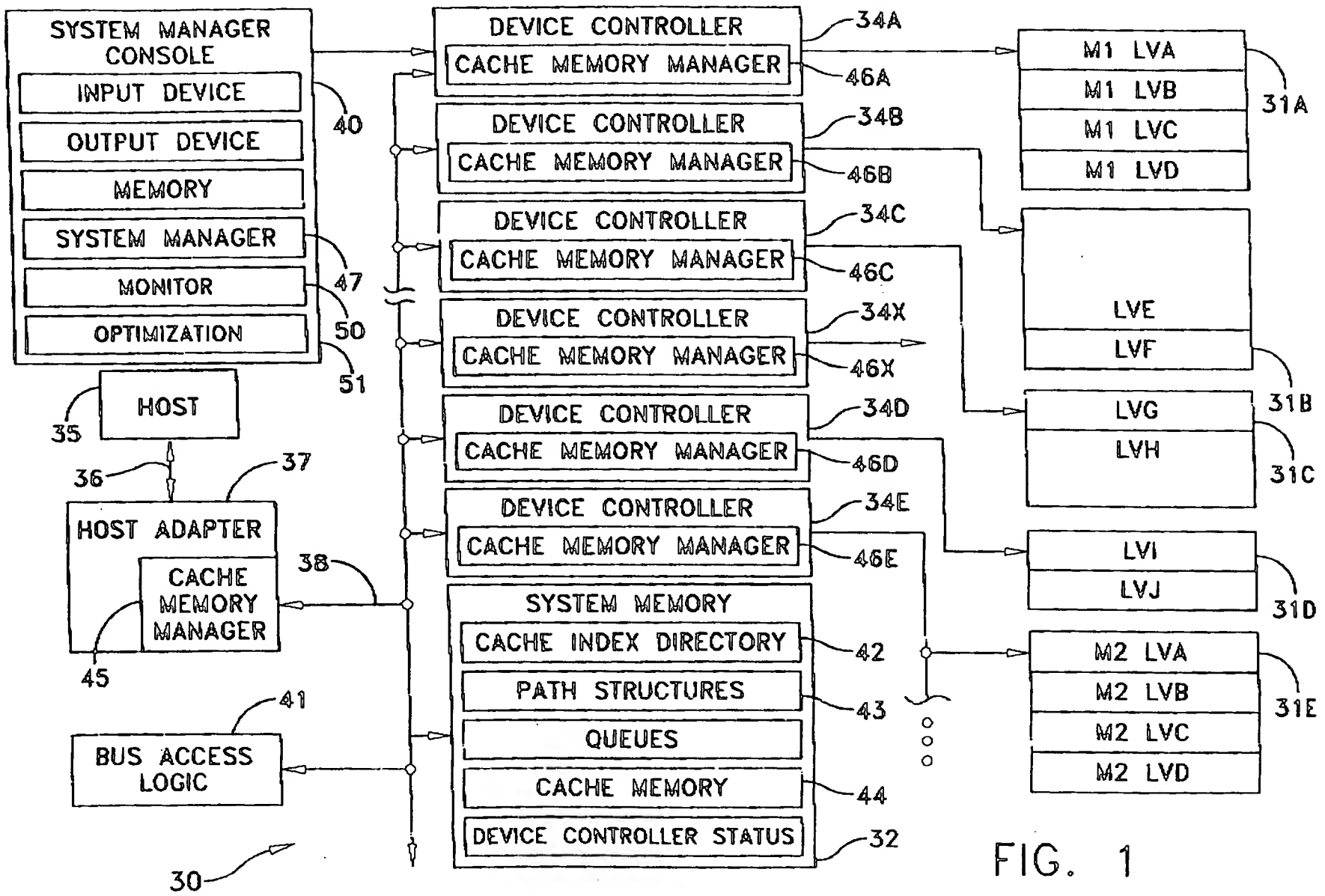

FIG. 1

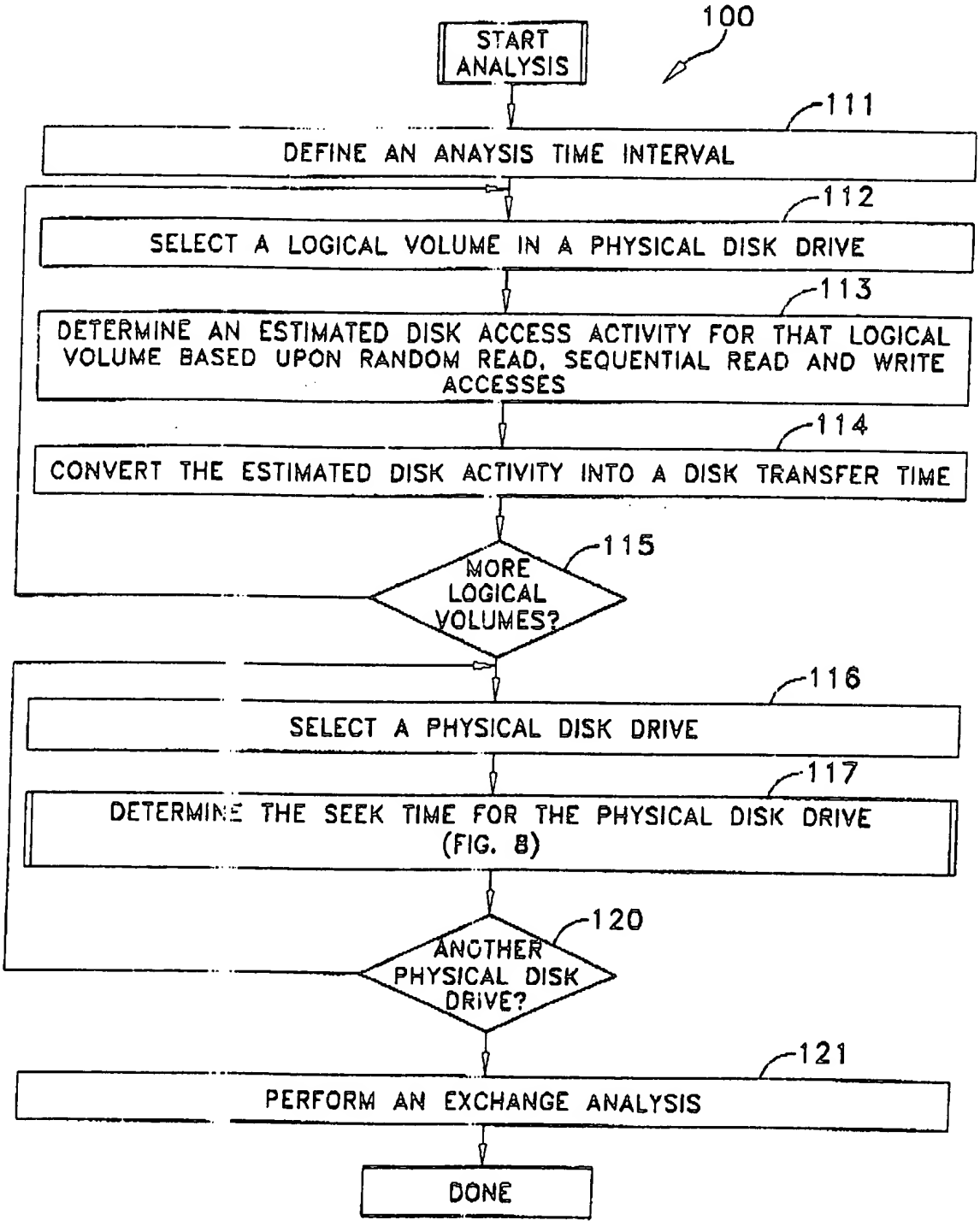
100
START ANALYSIS
111
DEFINE AN ANAYSIS TIME INTERVAL
112
SELECT A LOGICAL VOLUME IN A PHYSICAL DISK DRIVE
113
DETERMINE AN ESTIMATED DISK ACCESS ACTIVITY FOR THAT LOGICAL VOLUME BASED UPON RANDOM READ, SEQUENTIAL READ AND WRITE ACCESSES
114
CONVERT THE ESTIMATED DISK ACTIVITY INTO A DISK TRANSFER TIME
115
MORE LOGICAL VOLUMES?
116
SELECT A PHYSICAL DISK DRIVE
117
DETERMINE THE SEEK TIME FOR THE PHYSICAL DISK DRIVE (FIG. 8)
120
ANOTHER PHYSICAL DISK DRIVE?
121
PERFORM AN EXCHANGE ANALYSIS
DONE

FIG. 2

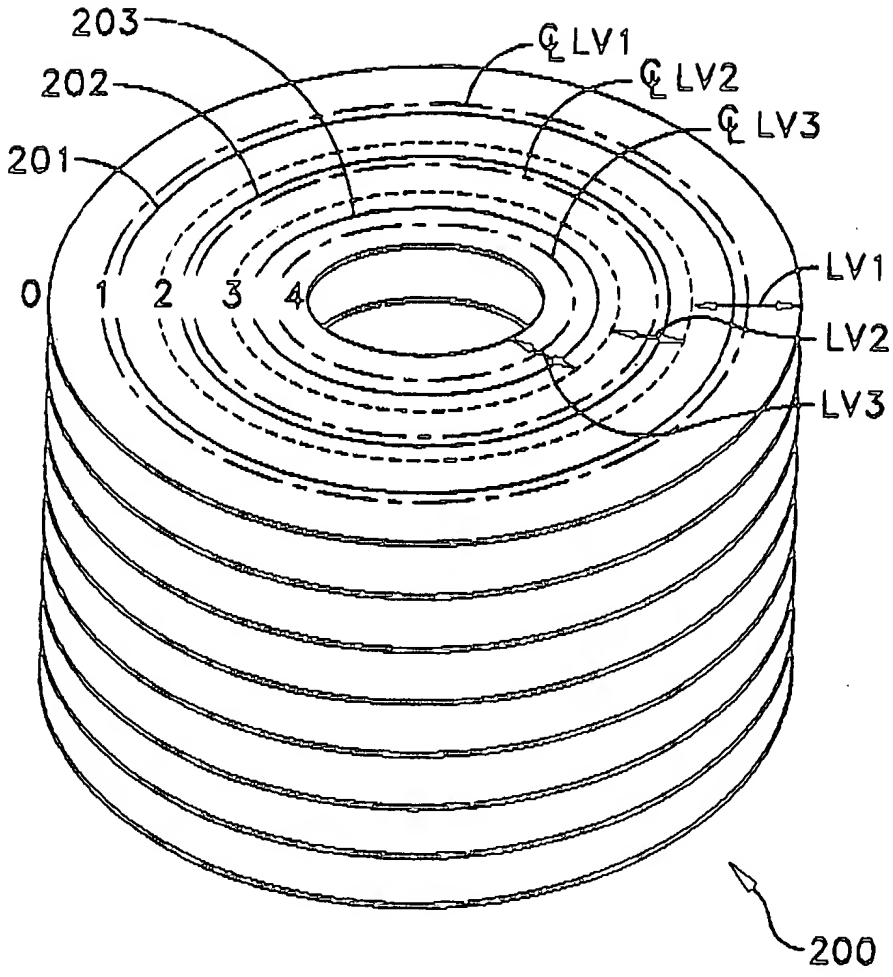

FIG. 3

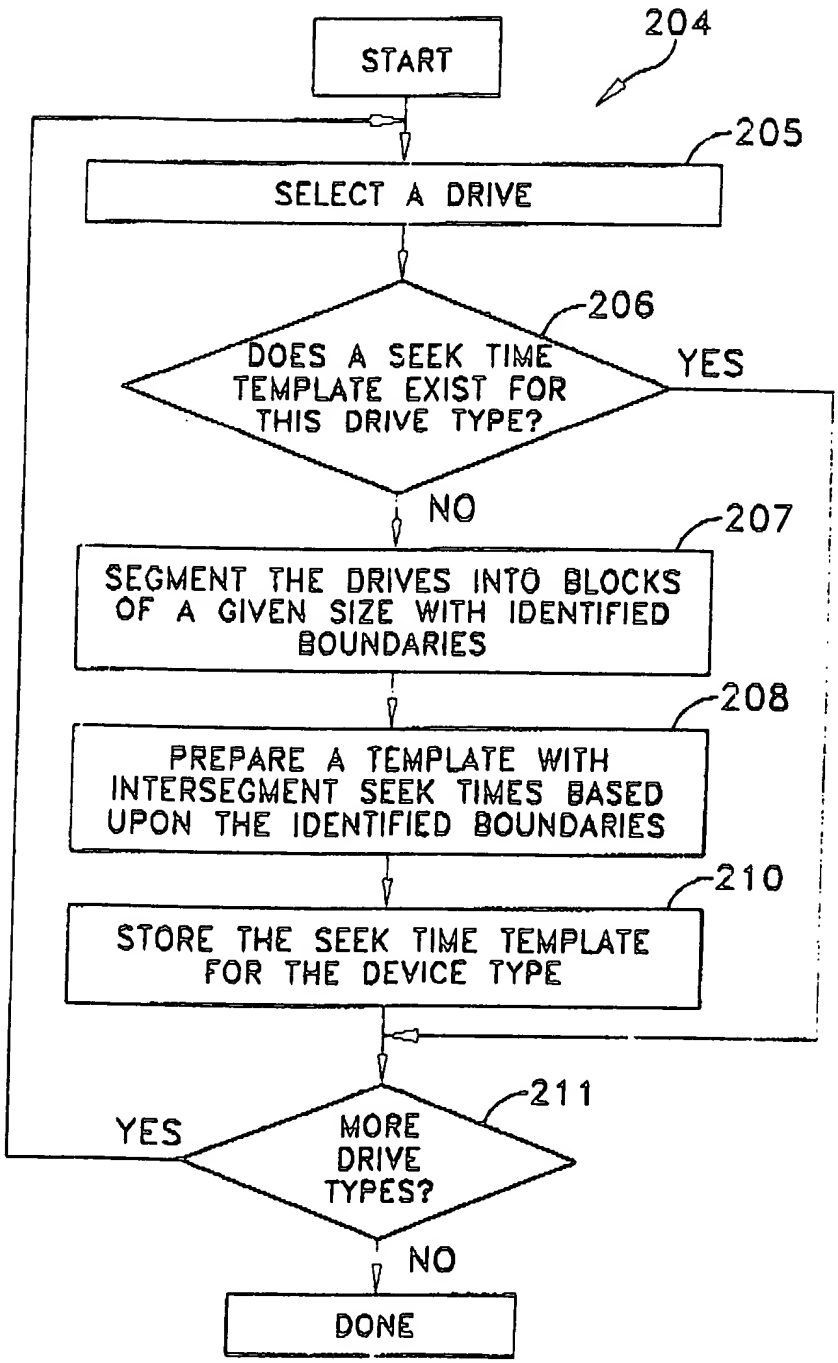
204
START
205
SELECT A DRIVE
206
DOES A SEEK TIME TEMPLATE EXIST FOR THIS DRIVE TYPE?
YES
NO
207
SEGMENT THE DRIVES INTO BLOCKS OF A GIVEN SIZE WITH IDENTIFIED BOUNDARIES
208
PREPARE A TEMPLATE WITH INTERSEGMENT SEEK TIMES BASED UPON THE IDENTIFIED BOUNDARIES
210
STORE THE SEEK TIME TEMPLATE FOR THE DEVICE TYPE
211
MORE DRIVE TYPES?
YES
NO
DONE

FIG. 4

MEASURED SEEK TIMES (msec)					INITIAL ADDRESS (GB)
TARGET ADDRESS (GB)					
0	1	2	3	4	
	3.0	3.2	3.4	3.8	0
		3.1	3.5	3.6	1
			3.3	3.5	2
				3.35	3

209

FIG. 5A

MEASURED SEEK TIMES (msec)					INITIAL ADDRESS (GB)
TARGET ADDRESS (GB)					
0	1	2	3	4	
	3.0	3.2	3.4	3.8	0
		3.1	3.5	3.6	1
			3.3	3.5	2
				3.35	3

z,p 224

y

q 225

223

FIG. 5B

MEASURED SEEK TIMES (msec)					INITIAL ADDRESS (GB)
TARGET ADDRESS (GB)					
0	1	2	3	4	
2.8*	3.0	3.2	3.4	3.8	0
	2.9*	3.1	3.5	3.6	1
		3.05*	3.3	3.5	2
			3.15*	3.35	3
				3.20*	4

FIG. 5C

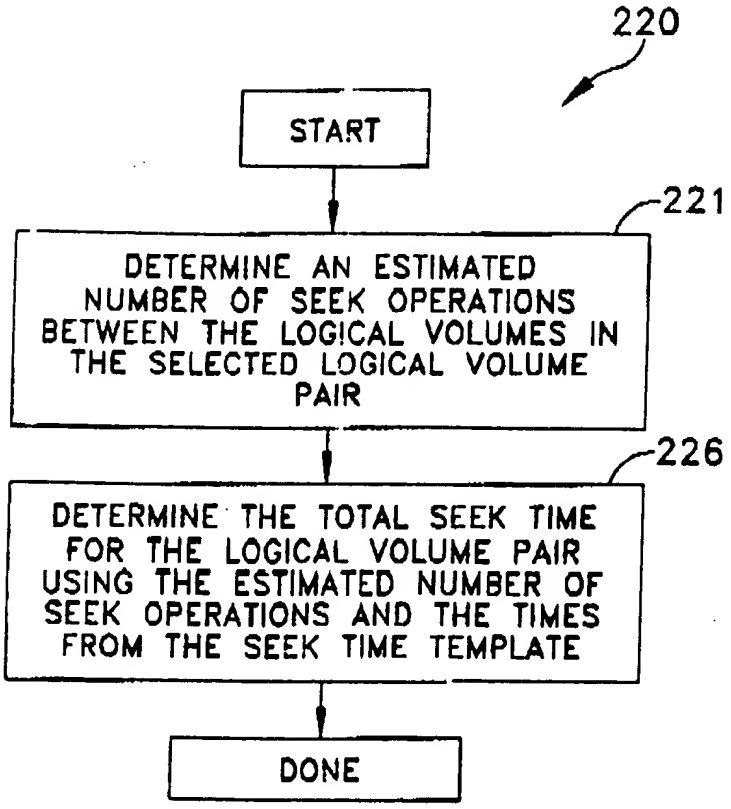
220
START
221
DETERMINE AN ESTIMATED NUMBER OF SEEK OPERATIONS BETWEEN THE LOGICAL VOLUMES IN THE SELECTED LOGICAL VOLUME PAIR
226
DETERMINE THE TOTAL SEEK TIME FOR THE LOGICAL VOLUME PAIR USING THE ESTIMATED NUMBER OF SEEK OPERATIONS AND THE TIMES FROM THE SEEK TIME TEMPLATE
DONE

FIG. 6

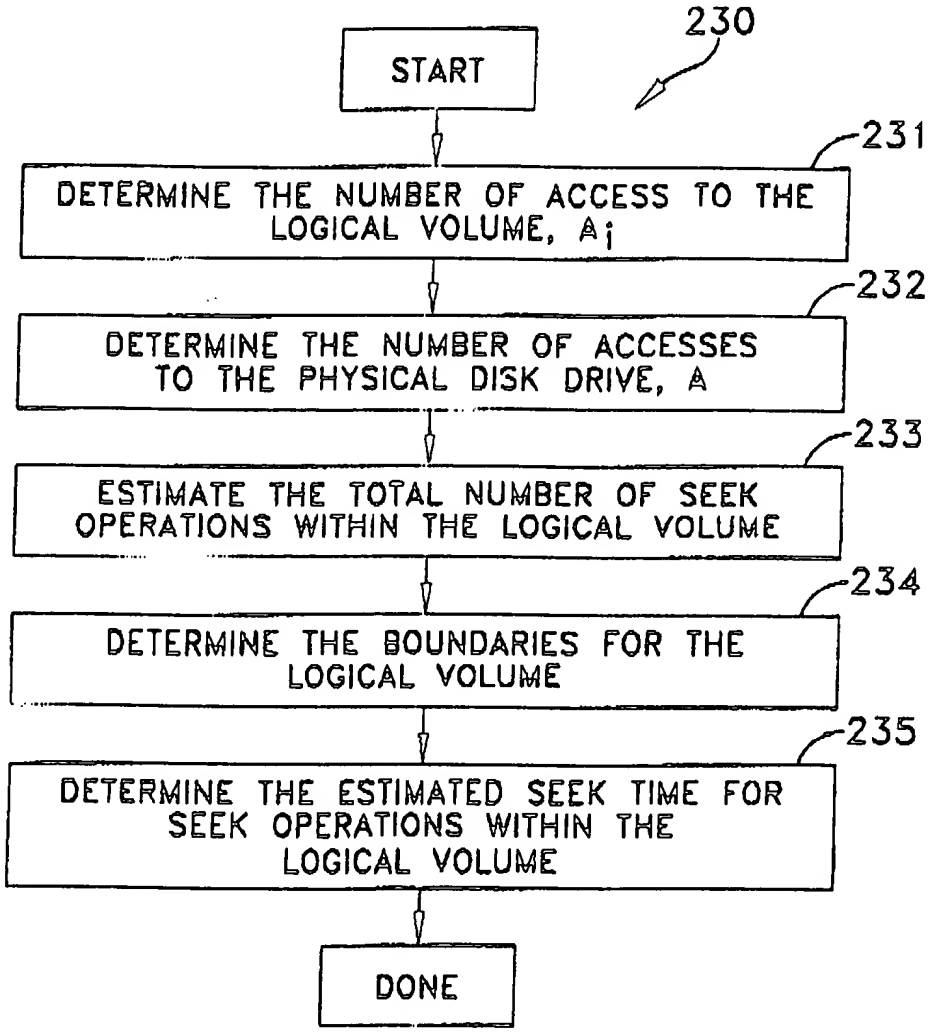
230
START
231
DETERMINE THE NUMBER OF ACCESS TO THE LOGICAL VOLUME, A_i
232
DETERMINE THE NUMBER OF ACCESSES TO THE PHYSICAL DISK DRIVE, A
233
ESTIMATE THE TOTAL NUMBER OF SEEK OPERATIONS WITHIN THE LOGICAL VOLUME
234
DETERMINE THE BOUNDARIES FOR THE LOGICAL VOLUME
235
DETERMINE THE ESTIMATED SEEK TIME FOR SEEK OPERATIONS WITHIN THE LOGICAL VOLUME
DONE

FIG. 7

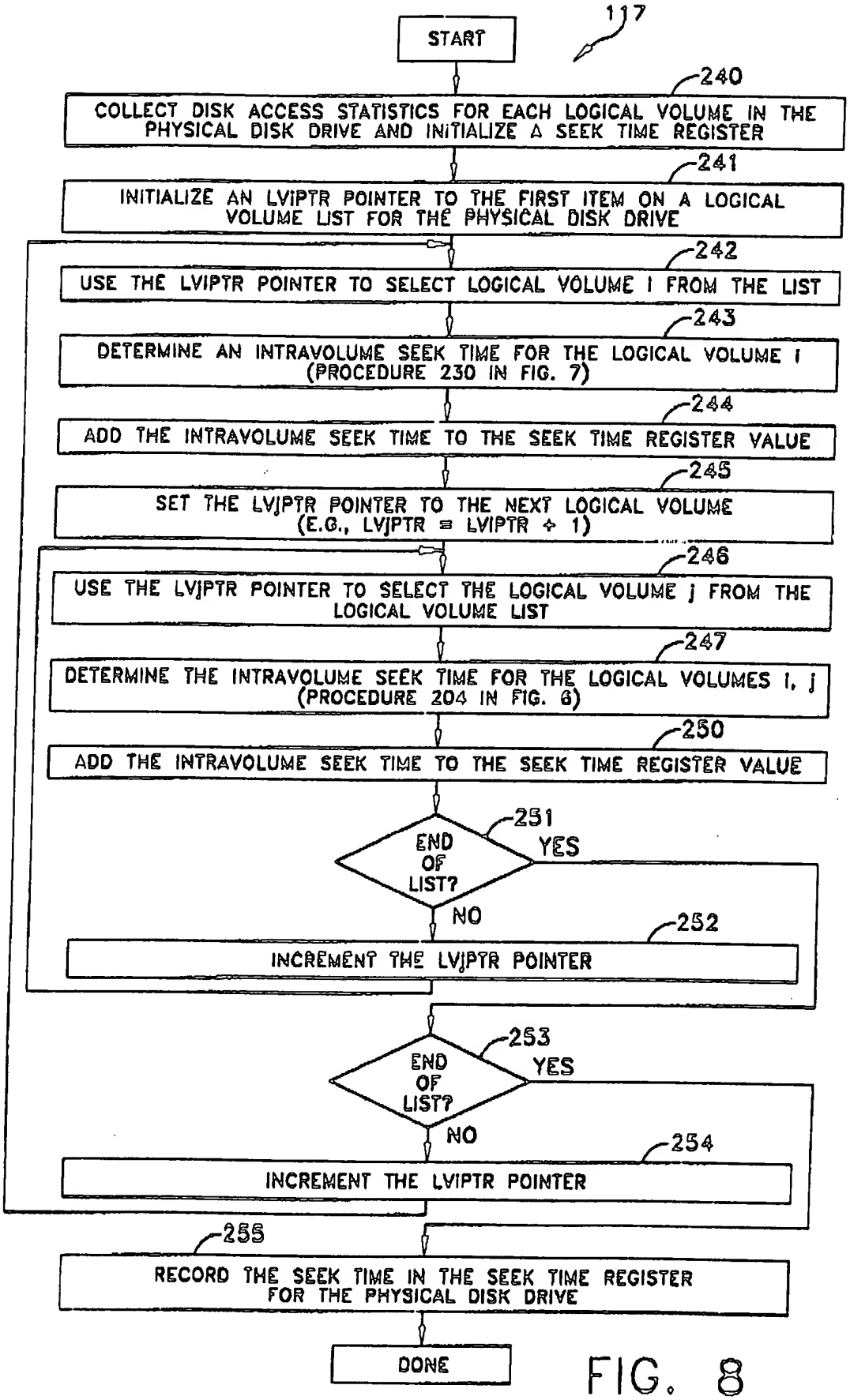
117
START
240
COLLECT DISK ACCESS STATISTICS FOR EACH LOGICAL VOLUME IN THE PHYSICAL DISK DRIVE AND INITIALIZE A SEEK TIME REGISTER
241
INITIALIZE AN LVIPTR POINTER TO THE FIRST ITEM ON A LOGICAL VOLUME LIST FOR THE PHYSICAL DISK DRIVE
242
USE THE LVIPTR POINTER TO SELECT LOGICAL VOLUME I FROM THE LIST
243
DETERMINE AN INTRAVOLUME SEEK TIME FOR THE LOGICAL VOLUME I (PROCEDURE 230 IN FIG. 7)
244
ADD THE INTRAVOLUME SEEK TIME TO THE SEEK TIME REGISTER VALUE
245
SET THE LVJPTR POINTER TO THE NEXT LOGICAL VOLUME (E.G., LVJPTR = LVIPTR + 1)
246
USE THE LVJPTR POINTER TO SELECT THE LOGICAL VOLUME j FROM THE LOGICAL VOLUME LIST
247
DETERMINE THE INTRAVOLUME SEEK TIME FOR THE LOGICAL VOLUMES I, j (PROCEDURE 204 IN FIG. 6)
250
ADD THE INTRAVOLUME SEEK TIME TO THE SEEK TIME REGISTER VALUE
251
END OF LIST?
YES
NO
252
INCREMENT THE LVJPTR POINTER
253
END OF LIST?
YES
NO
254
INCREMENT THE LVIPTR POINTER
255
RECORD THE SEEK TIME IN THE SEEK TIME REGISTER FOR THE PHYSICAL DISK DRIVE
DONE

FIG. 8